

ABSTRACT OF THE DISCLOSURE

A low voltage low power signal processing system and method for use in low power and/or portable measuring instruments such as linear or rotary encoders, electronic calipers and the like. In one embodiment, the analog-to-digital converter is implemented as a parallel, single ramp, with two matched comparators for each leg of differential input, which can be implemented with relatively simple circuitry, and consequently be of a small size. The system may be used with a three-phase transducer configuration, for which the preferred signal processing techniques are able to cancel most of the third harmonic distortion in the system, and for which the fully differential signal processing methods of the invention are advantageous. The invention may be used in a portable measuring instrument that operates from a single 1.5 volt watch battery or solar cell, and that has a current drain of 5 microamps. By using capacitors of the same type in the ramp generator and clock generator, and charging them with scaled bias currents, and by using resistors and capacitors of the same type in the clock and analog-to-digital converter, the scale factor of the system is made to be independent of process parameters.